

1 CLAIMS:

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3 1. A transmission line system, comprising a synchronization circuit for adding a  
4 synchronization pulse to a video signal, said synchronization pulse having  
5 amplitude at least fifty percent greater than said video signal, a transmission line  
6 having a loss and distortion characteristic for receiving the output of said  
7 synchronization circuit, and a filter network comprising a plurality of selectable  
8 filters configured to compensate said loss and distortion characteristic, said  
9 filters being selectable to accommodate loss and distortion characteristics of lines  
10 of different length.

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12 2. A system as in claim 1, wherein each of said selectable filters electrically  
13 defines a plurality of poles embodied in a plurality of resistor-capacitor  
14 networks.

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16 3. A system as in claim 2, wherein one of said selectable filters is adjustable to  
17 accommodate transmission lines of different length.

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19 4. A system as in claim 2, wherein a first of said filters accommodates for a first  
20 length of line, a second of said filters accommodates for said first of said filters  
21 and an additional length of line, and a third of said filters accommodates for said  
22 first and second of said filters and a second additional length of line.

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24 5. A system as in claim 4, wherein one of said filters is a filter whose  
25 characteristics may be varied to accommodate additional transmission line  
26 lengths of different magnitude.

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28 6. A transmission line system as in claim 1, further comprising a high-speed  
29 operational amplifier first clamp coupled to the output of said filters, the output

1 of said operational amplifier first clamp being coupled to one end of a forward-  
2 biased semiconductor junction, the other end of said semiconductor junction  
3 being coupled to a second semiconductor clamp, said second semiconductor  
4 clamp having a second junction and exhibiting capacitance across said second  
5 junction, a third semiconductor clamp receiving the output of said second  
6 semiconductor clamp, said third semiconductor clamp being biased to cause a  
7 geometric increase in current flow through said third semiconductor clamp to  
8 regulate an undershoot condition at the output of said second semiconductor  
9 clamp.

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11 7. A transmission line filter system, comprising:

12 (a) a first filter having an input and an output adapted to compensate for the  
13 characteristics of a first length of twisted-pair wire;

14 (b) a first bypass path having an input and an output for bypassing said first  
15 filter;

16 (c) a second filter having an input and an output adapted to compensate for the  
17 characteristics of a second length of twisted-pair wire;

18 (d) a second bypass path having an input and an output for bypassing said first  
19 filter;

20 (e) a third filter having an input and an output adapted to compensate for the  
21 characteristics of a third length of twisted-pair wire;

22 (f) a third bypass path having an input and an output for bypassing said first  
23 filter;

24 (g) a coupling device for coupling an input high resolution video signal;

25 (h) a first input switch for connecting said coupling device to the input of said  
26 first filter or said first bypass path;

27 (i) a first output switch coupling the output of said first filter, when said first  
28 input switch is connecting said coupling device to the input of said first filter, or

1 coupling said first bypass path when said first input switch is connecting said  
2 coupling device to said first bypass path;  
3 (j) a second input switch for connecting said first output switch to the input of  
4 said second filter or said second bypass path;  
5 (k) a second output switch coupling the output of said second filter, when said  
6 second input switch is connecting said first output switch to the input of said  
7 second filter, or coupling said second bypass path when said second input switch  
8 is connecting said first output switch to said second bypass path;  
9 (l) a third input switch for connecting said second output switch to the input of  
10 said third filter or said third bypass path;  
11 (m) a third output switch coupling the output of said third filter, when said third  
12 input switch is connecting said second output switch to the input of said third  
13 filter, or coupling said third bypass path when said third input switch is  
14 connecting said second output switch to said third bypass path; and  
15 (n) an output coupling line coupled to receive the output from said third output  
16 switch.

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18 8. A transmission line filter system as in claim 7, further comprising a twisted-  
19 pair feed coupled to said coupling device.

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21 9. A transmission line filter system as in claim 7, wherein said second filter  
22 compensates for said second length and said first filter, and said first filter or  
23 said second filter is adjustable to compensate for the characteristics of a variable  
24 length of line.

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26 10. A transmission line filter system as in claim 7, wherein said second and third  
27 lengths are equal to each other.

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- 1 11. A transmission line filter system as in claim 7, wherein said third length is  
2 twice as long as said second length.  
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- 4 12. A transmission line system as in claim 7, further comprising a clamping  
5 system coupling said third output switch to said output coupling line, said  
6 clamping system comprising a high-speed operational amplifier first clamp  
7 coupled to the output of said third output switch, the output of said operational  
8 amplifier first clamp being coupled to one end of a forward-biased  
9 semiconductor junction, the other end of said semiconductor junction being  
10 coupled to a second semiconductor clamp, said second semiconductor clamp  
11 having a second junction and exhibiting capacitance across said second junction,  
12 a third semiconductor clamp receiving the output of said second semiconductor  
13 clamp, said third semiconductor clamp being biased to cause a geometric  
14 increase in current flow through said third semiconductor clamp to regulate an  
15 undershoot condition at the output of said second semiconductor clamp.  
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- 17 13. A transmission line filter system as in claim 7, further comprising a twisted-  
18 pair feed coupled to said coupling device, and wherein said second filter  
19 compensates for said second length and said first filter, and said first filter or  
20 said second filter is adjustable to compensate for the characteristics of a variable  
21 length of line.  
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- 23 14. A transmission line filter system as in claim 13, wherein said second and  
24 third lengths are equal to each other.  
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- 26 15. A transmission line filter system as a claim 14, wherein said filters are  
27 multiple filters, said filters comprising a plurality of resistor-capacitor networks.  
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